

PATENT COOPERATION TREATY

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

To:

PURVIS, William, Michael, Cameron
D Young & Co
21 New Fetter Lane
London EC4A 1DA
ROYAUME-UNI

Date of mailing (day/month/year)

04 July 2000 (04.07.00)

Applicant's or agent's file reference

P006038WO MP

IMPORTANT NOTIFICATION

International application No.

PCT/GB99/04397

International filing date (day/month/year)

23 December 1999 (23.12.99)

1. The following indications appeared on record concerning:

☒

the applicant

☒

the inventor

☐

the agent

☐

the common representative

Name and Address

SCHNABEL, John, David
11A Berkeley Close
Hill Head
Fareham
Hampshire
United Kingdom

State of Nationality

GB

State of Residence

GB

Telephone No.

Facsimile No.

Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐

the person

☐

the name

☒

the address

☐

the nationality

☐

the residence

Name and Address

SCHNABEL, John, David
11A Berkeley Close
Hill Head
Fareham
Hampshire PO14 3NW
United Kingdom

State of Nationality

GB

State of Residence

GB

Telephone No.

Facsimile No.

Teleprinter No.

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

☒

the receiving Office

☐

the International Searching Authority

☐

the International Preliminary Examining Authority

☒

the designated Offices concerned

☐

the elected Offices concerned

☐

other:

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Maria Victoria CORTIELLO

Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
United States Patent and Trademark
Office
Box PCT
Washington, D.C.20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year)

28 August 2000 (28.08.00)

International application No.

PCT/GB99/04397

Applicant's or agent's file reference

P006038WO MP

International filing date (day/month/year)

23 December 1999 (23.12.99)

Priority date (day/month/year)

30 December 1998 (30.12.98)

Applicant

SCHNABEL, John, David et al

1. The designated Office is hereby notified of its election made:



in the demand filed with the International Preliminary Examining Authority on:

28 July 2000 (28.07.00)



in a notice effecting later election filed with the International Bureau on:

2. The election



was



was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Zakaria EL KHODARY

Telephone No.: (41-22) 338.83.38

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P006038WO KMB		FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/GB99/04397	International filing date (day/month/year) 23/12/1999	Priority date (day/month/year) 30/12/1998	
International Patent Classification (IPC) or national classification and IPC A47B96/06			
Applicant APW ELECTRONICS LIMITED et al.			

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.


2. This REPORT consists of a total of 9 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 3 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☒ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 28/07/2000	Date of completion of this report 17.04.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Martin Gonzalez, G Telephone No. +49 89 2399 2154



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB99/04397

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-7 as originally filed

Claims, No.:

1-8 as received on 05/02/2001 with letter of 30/01/2001

Drawings, sheets:

1/7-7/7 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB99/04397

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

- ☐ restricted the claims.
☐ paid additional fees.
☐ paid additional fees under protest.
☐ neither restricted nor paid additional fees.

2. ☒ This Authority found that the requirement of unity of invention is not complied and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.
☒ not complied with for the following reasons:
see separate sheet

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☒ all parts.
☐ the parts relating to claims Nos. .

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-8
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-8
	No:	Claims	

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB99/04397

Industrial applicability (IA) Yes: Claims 1-8
 No: Claims

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

Re Item IV

Lack of unity of invention

The application lacks unity within the meaning of Rule 13.1 PCT. A technical relationship involving one or more of the same or corresponding special technical features in the sense of Rule 13.2 PCT does not exist between the subject-matter of the following groups of dependent claims:

- a) Claims 1-3: Mounting of internal panels within a cabinet with only an horizontal insertion movement.
- b) Claims 4: Securing in abutment of two rectangular section tubular metal members.
- d) Claims 5-8: Method of hanging a vertical side panel.

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following document/s/:

- D1: EP-A-0 012 209 (LOH KG RITTAL WERK) 25 June 1980 (1980-06-25)
- D2: DE 18 48 964 U (LICENTIA PATENT-VERWALTUNG GMBH) 20 September 1961 (1961-09-20)
- D3: GB-A-2 160 765 (SCHAEFER GMBH FRITZ) 2 January 1986 (1986-01-02)
- D4: US-A-5 425 520 (MASUMOTO SAKAE) 20 June 1995 (1995-06-20)

1. CLAIMS 1-3

The document D1 (=EP-A-0 012 209) is regarded as being the **closest prior art** to the subject-matter of claim 1, and discloses

panel mounting means for mounting panels of a cabinet comprising panel mounts in the form of members disposable at vertical positions within the cabinet and having attachment means for the mounting of panels thereupon, the panel mounts

being mountable to side members or braces, extending between side members, of the cabinet by integral members which extend substantially parallel to and at a spacing from the outer face thereof, such integral members each being engaged in a respective aperture in the side members at one lateral side of the cabinet followed by a movement downwardly to secure the panel mount to the side members.

The **problem** to be solved by the present invention may therefore be regarded as the provision of means of the type of D1 whereby the panel mounts of the full height of the side members can be secured to the side members.

Solution: The integral members of the claimed means extend in a direction perpendicular to the longitudinal extent of the panel mount, each panel mount being mounted by engagement of the integral member thereof in the respective aperture in the side members or braces, followed by movement forwardly or rearwardly to secure the panel mount to the respective side member or brace, and retaining means, such as pins or studs for insertion in aligned bores in the panel mounts and the side members or braces prevent return movement of the panel mounts in forward or rearward directions.

Documents D2 discloses a bolted joint between two metal members. D3 discloses a method for hanging lateral panels of a cabinet.

Document D4 describes a corner bracket for reinforcement of shelf joints. Projecting portions of the bracket matching with holes or slots of the shelf are disclosed. No lateral movement for engaging the projecting portions and the slots is disclosed. The brackets are secured by means of screws.

Claim 1 is therefore novel and inventive and has industrial applicability in the sense of Article 33(2)(3)(4) PCT.

Claims 2,3 concern particular embodiments of the panel mounting means defined in claim 1 and as such also meet the requirements of Article 33 (2)(3)(4) PCT.

2. CLAIM 4

The document D2 is regarded as being the **closest prior art** to the subject-matter of claim 4, and discloses

a method for securing in abutment two L-shaped section metal members (the lateral member of one of the frames 1 or 2 with any of the L-shaped members 3 or 4) having longitudinal axes extending mutually at right angles (see fig. 1), comprising bursting or drilling at least two holes (cf. page 1, par. 3, line 1) in one wall of each of the metal members to form an outwardly extending collar (see fig. 4), screw threading collars in one of the metal members 1 (cf. claim 3 in page 4, line 6), engaging the collars of the other of the metal members 3 in the holes of the one of the metal members 1 (cf. claim 3, lines 3,4) and engaging bolts through respective ones of the aligned holes in the metal members (cf. claim 3, lines 5-7) to engage the screw threads in the collars of the one of the metal members to clamp the metal members together.

The **problem** to be solved by the present invention may therefore be regarded as the provision of a method as the one disclosed in D2, which is applicable to rectangular section tubular members.

Solution: The method of claim 4 further comprises the steps of punching or drilling two first holes in one wall of each of the metal members and act through the first holes to burst second holes respective to each of the first holes in the opposite walls.

D1 describes panel mounting means. D3 discloses a method for hanging lateral panels of a cabinet. Document D4 describes a corner bracket for reinforcement of shelf joints. Projecting portions of the bracket matching with holes or slots of the shelf are disclosed.

Claim 4 is therefore novel and inventive and has industrial applicability in the sense of Article 33(2)(3)(4) PCT.

3. CLAIMS 5-8

The document D3 is regarded as being the **closest prior art** to the subject-matter of claim 5, and discloses a

a method of hanging a vertical side panel 6 of an electrical cabinet 1 comprising

engaging a top part 8 of the side panel 6, which top part 8 has a horizontal portion (the recess 8 is surrounded by a top horizontal portion and a vertical return opposite the panel side 6), over an upper suspension member 11 of a frame of the cabinet 1, and engaging a horizontal lower flange 9 of the side panel 6 with a hook portion 12 at the lower end of the frame of the cabinet 1.

The **problem** to be solved by the present invention may therefore be regarded as the provision of a method of hanging a vertical side panel, whereby the side panels can quickly and easily be engaged and disengaged from the framework of the cabinet.

Solution: In the claimed method, a lower flange of the side panel is engaged with an upturned hook portion at the lower end of the frame of the cabinet so that the upturned hook projects upwardly through an aperture in the lower flange, wherein the aperture in the lower flange is aligned with a cutout in a free edge of the lower flange and engagement is effected by engaging the hook in the cutout and then slightly raising the side panel while pushing the same inwardly towards the cabinet before lowering the side panel downwardly onto the hook.

The side panels can thus more quickly and easily be engaged.

Document D1 describes means for mounting panels within a cabinet with an horizontal movement to engage panel horizontal hooks into apertures of the cabinet side members plus the insertion of retaining means such as pin or stud. Documents D2 discloses a bolted joint between two metal members.

Document D4 describes a corner bracket for reinforcement of shelf joints. Projecting portions of the bracket matching with holes or slots of the shelf are disclosed. No lateral movement for engaging the projecting portions and the slots is disclosed. The brackets are secured by means of screws.

Claim 5 is therefore novel and inventive and has industrial applicability in the sense of Article 33(2)(3)(4) PCT.

Claims 6-8 concern particular embodiments of the method defined in claim 1 and as such also meet the requirements of Article 33 (2)(3)(4) PCT.

Re Item VII

Certain defects in the international application

1. CLAIM 1

Independent claim 1 is not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (document D1) being placed in the preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).

2. DESCRIPTION

Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1, D2 and D3 is not mentioned in the description, nor are these documents identified therein.

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

<p>To:</p> <p>BODEN, Dr Keith McMurray D. Young & Co. 21 New Fetter Lane London EC4A 1DA GRANDE BRETAGNE</p>	<p>MONEY £</p> <p>ORDER P/6038 WO</p> <p>DIARY</p> <p>REC'D 19 APR 2001</p> <p>APR 19 2001</p> <p>FOR \$5 AP</p>	<p>SOUTHAMPTON</p> <p>19 APR 2001</p> <p>PCT</p> <p>NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Rule 71.1)</p>
<p>Applicant's or agent's file reference P006038WO KMB</p>		<p>Date of mailing (day/month/year) 17.04.2001</p>

<p>Applicant's or agent's file reference P006038WO KMB</p>			<p>IMPORTANT NOTIFICATION</p>
<p>International application No. PCT/GB99/04397</p>	<p>International filing date (day/month/year) 23/12/1999</p>	<p>Priority date (day/month/year) 30/12/1998</p>	
<p>Applicant APW ELECTRONICS LIMITED et al.</p>			


1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

<p>Name and mailing address of the IPEA/</p> <p> European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465</p>	<p>Authorized officer</p> <p>Dumas, E</p> <p>Tel. +49 89 2399-7531</p>
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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference P006038WO KMB	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/GB99/04397	International filing date (day/month/year) 23/12/1999	Priority date (day/month/year) 30/12/1998
International Patent Classification (IPC) or national classification and IPC A47B96/06		
Applicant APW ELECTRONICS LIMITED et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 9 sheets, including this cover sheet.
 - ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 3 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☒ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 28/07/2000	Date of completion of this report 17.04.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Martin Gonzalez, G Telephone No. +49 89 2399 2154 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB99/04397

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17):*)

Description, pages:

1-7 as originally filed

Claims, No.:

1-8 as received on 05/02/2001 with letter of 30/01/2001

Drawings, sheets:

1/7-7/7 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB99/04397

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

- ☐ restricted the claims.
☐ paid additional fees.
☐ paid additional fees under protest.
☐ neither restricted nor paid additional fees.

2. ☒ This Authority found that the requirement of unity of invention is not complied and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.
☒ not complied with for the following reasons:
see separate sheet

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☒ all parts.
☐ the parts relating to claims Nos. .

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-8
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-8
	No:	Claims	

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB99/04397

Industrial applicability (IA) Yes: Claims 1-8
 No: Claims

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB99/04397

Re Item IV

Lack of unity of invention

The application lacks unity within the meaning of Rule 13.1 PCT. A technical relationship involving one or more of the same or corresponding special technical features in the sense of Rule 13.2 PCT does not exist between the subject-matter of the following groups of dependent claims:

- a) Claims 1-3: Mounting of internal panels within a cabinet with only an horizontal insertion movement.
- b) Claims 4: Securing in abutment of two rectangular section tubular metal members.
- d) Claims 5-8: Method of hanging a vertical side panel.

R Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following document/s/:

- D1: EP-A-0 012 209 (LOH KG RITTAL WERK) 25 June 1980 (1980-06-25)
- D2: DE 18 48 964 U (LICENTIA PATENT-VERWALTUNG GMBH) 20 September 1961 (1961-09-20)
- D3: GB-A-2 160 765 (SCHAEFER GMBH FRITZ) 2 January 1986 (1986-01-02)
- D4: US-A-5 425 520 (MASUMOTO SAKAE) 20 June 1995 (1995-06-20)

1. CLAIMS 1-3

The document D1 (=EP-A-0 012 209) is regarded as being the **closest prior art** to the subject-matter of claim 1, and discloses

panel mounting means for mounting panels of a cabinet comprising panel mounts in the form of members disposable at vertical positions within the cabinet and having attachment means for the mounting of panels thereupon, the panel mounts

being mountable to side members or braces, extending between side members, of the cabinet by integral members which extend substantially parallel to and at a spacing from the outer face thereof, such integral members each being engaged in a respective aperture in the side members at one lateral side of the cabinet followed by a movement downwardly to secure the panel mount to the side members.

The **problem** to be solved by the present invention may therefore be regarded as the provision of means of the type of D1 whereby the panel mounts of the full height of the side members can be secured to the side members.

Solution: The integral members of the claimed means extend in a direction perpendicular to the longitudinal extent of the panel mount, each panel mount being mounted by engagement of the integral member thereof in the respective aperture in the side members or braces, followed by movement forwardly or rearwardly to secure the panel mount to the respective side member or brace, and retaining means, such as pins or studs for insertion in aligned bores in the panel mounts and the side members or braces prevent return movement of the panel mounts in forward or rearward directions.

Documents D2 discloses a bolted joint between two metal members. D3 discloses a method for hanging lateral panels of a cabinet.

Document D4 describes a corner bracket for reinforcement of shelf joints. Projecting portions of the bracket matching with holes or slots of the shelf are disclosed. No lateral movement for engaging the projecting portions and the slots is disclosed. The brackets are secured by means of screws.

Claim 1 is therefore novel and inventive and has industrial applicability in the sense of Article 33(2)(3)(4) PCT.

Claims 2,3 concern particular embodiments of the panel mounting means defined in claim 1 and as such also meet the requirements of Article 33 (2)(3)(4) PCT.

2. CLAIM 4

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB99/04397

The document D2 is regarded as being the **closest prior art** to the subject-matter of claim 4, and discloses

a method for securing in abutment two L-shaped section metal members (the lateral member of one of the frames 1 or 2 with any of the L-shaped members 3 or 4) having longitudinal axes extending mutually at right angles (see fig. 1), comprising bursting or drilling at least two holes (cf. page 1, par. 3, line 1) in one wall of each of the metal members to form an outwardly extending collar (see fig. 4), screw threading collars in one of the metal members 1 (cf. claim 3 in page 4, line 6), engaging the collars of the other of the metal members 3 in the holes of the one of the metal members 1 (cf. claim 3, lines 3,4) and engaging bolts through respective ones of the aligned holes in the metal members (cf. claim 3, lines 5-7) to engage the screw threads in the collars of the one of the metal members to clamp the metal members together.

The **problem** to be solved by the present invention may therefore be regarded as the provision of a method as the one disclosed in D2, which is applicable to rectangular section tubular members.

Solution: The method of claim 4 further comprises the steps of punching or drilling two first holes in one wall of each of the metal members and act through the first holes to burst second holes respective to each of the first holes in the opposite walls.

D1 describes panel mounting means. D3 discloses a method for hanging lateral panels of a cabinet. Document D4 describes a corner bracket for reinforcement of shelf joints. Projecting portions of the bracket matching with holes or slots of the shelf are disclosed.

Claim 4 is therefore novel and inventive and has industrial applicability in the sense of Article 33(2)(3)(4) PCT.

3. CLAIMS 5-8

The document D3 is regarded as being the **closest prior art** to the subject-matter of claim 5, and discloses a

a method of hanging a vertical side panel 6 of an electrical cabinet 1 comprising

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB99/04397

engaging a top part 8 of the side panel 6, which top part 8 has a horizontal portion (the recess 8 is surrounded by a top horizontal portion and a vertical return opposite the panel side 6), over an upper suspension member 11 of a frame of the cabinet 1, and engaging a horizontal lower flange 9 of the side panel 6 with a hook portion 12 at the lower end of the frame of the cabinet 1.

The **problem** to be solved by the present invention may therefore be regarded as the provision of a method of hanging a vertical side panel, whereby the side panels can quickly and easily be engaged and disengaged from the framework of the cabinet.

Solution: In the claimed method, a lower flange of the side panel is engaged with an upturned hook portion at the lower end of the frame of the cabinet so that the upturned hook projects upwardly through an aperture in the lower flange, wherein the aperture in the lower flange is aligned with a cutout in a free edge of the lower flange and engagement is effected by engaging the hook in the cutout and then slightly raising the side panel while pushing the same inwardly towards the cabinet before lowering the side panel downwardly onto the hook.

The side panels can thus more quickly and easily be engaged.

Document D1 describes means for mounting panels within a cabinet with an horizontal movement to engage panel horizontal hooks into apertures of the cabinet side members plus the insertion of retaining means such as pin or stud. Documents D2 discloses a bolted joint between two metal members.

Document D4 describes a corner bracket for reinforcement of shelf joints. Projecting portions of the bracket matching with holes or slots of the shelf are disclosed. No lateral movement for engaging the projecting portions and the slots is disclosed. The brackets are secured by means of screws.

Claim 5 is therefore novel and inventive and has industrial applicability in the sense of Article 33(2)(3)(4) PCT.

Claims 6-8 concern particular embodiments of the method defined in claim 1 and as such also meet the requirements of Article 33 (2)(3)(4) PCT.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB99/04397

Re Item VII

Certain defects in the international application

1. CLAIM 1

Independent claim 1 is not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (document D1) being placed in the preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).

2. DESCRIPTION

Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1, D2 and D3 is not mentioned in the description, nor are these documents identified therein.

CLAIMS

1. Panel mounting means for mounting panels of a cabinet, comprising panel mounts (1) in the form of members disposable at vertical positions within the cabinet and having attachment means for the mounting of panels thereupon, the panel mounts (1) being mountable to side members (5), or braces (7) extending between side members (5), of the cabinet by integral members (3) which extend substantially parallel to and at a spacing from the outer face thereof and in a direction perpendicular to the longitudinal extent thereof, each panel mount (1) being mounted by engagement of the integral member (3) thereof in a respective aperture (4, 6) in the side members (5) or braces (7), followed by movement forwardly or rearwardly to secure the panel mount (1) to the respective side member (5) or brace (7), and retaining means, such as pins or studs, for insertion in aligned bores (8, 9) in the panel mounts (1) and the side members (5) or braces (7) to prevent return movement of the panel mounts (1) in the forward or rearward directions.
2. Panel mounting means for mounting panels according to claim 1 in combination with side members (5) or braces (7) of a cabinet, wherein the apertures (4, 6) in the side members (5) or braces (7) are spaced with a 25mm horizontal spacing to set the locations at which the panel mounts (1) can be secured at 25mm spacings.
3. Panel mounting means for mounting panels according to claim 1 or 2 in combination with side members (5) or braces (7) of a cabinet, wherein the braces (7) have horizontally elongate slots (10) therein, whereby the braces (7) are securable by fastening means, such as bolts, extending through the slots (10), and horizontally movable with respect to the side members (5) to permit the panel mounts (1) to be secured at any desired location in the depth of the cabinet.
4. A method of securing in abutment two rectangular-section tubular metal

members (23, 24) having longitudinal axes extending mutually at right angles, comprising punching or drilling at least two first holes (30, 32) in one wall (31, 33) of each of the metal members (23, 24), acting through the first holes (30, 32) so formed to burst second holes (34, 36), respective to each of the first holes (30, 32), in the opposite walls (35, 37) of the metal members (23, 24) to form outwardly-extending collars (38, 39), screw threading the collars (39) in one of the metal members (23), engaging the collars (38) of the other of the metal members (34) in the first holes (32) of the one of the metal members (23), and engaging bolts through respective ones of the aligned first and second holes (32, 32, 34, 36) in the metal members (23, 24) to engage the screw threads in the collars (39) of the one of the metal members (23) to clamp the metal members (23, 24) together.

5. A method of hanging a vertical side panel (26) of an electrical cabinet, comprising engaging a top flange of the side panel (26), which top flange has a horizontal portion (28), over an upper suspension member of a frame of the cabinet, and engaging a horizontal lower flange (44) of the side panel (26) with an upturned hook portion (47) at the lower end of the frame of the cabinet such that the upturned hook (47) projects upwardly through an aperture (45) in the lower flange (44), wherein the aperture (45) in the lower flange (44) is aligned with a cutout (46) in a free edge of the lower flange (44) and engagement is effected by engaging the hook (47) in the cutout (46) and then slightly raising the side panel (26) while pushing the same inwardly towards the cabinet before lowering the side panel (26) downwardly onto the hook (47).

6. A method according to claim 5, wherein the upper suspension member of the frame of the cabinet is provided at the upper end of vertical side members (24) of the frame or on extension pieces (48) which are supported by the side members (24) and project laterally outwardly to extend beyond the side members (24).

7. A method according to claim 6, wherein the extension pieces (48) have hooks (49) to engage over the upper edges of the side members (24), in a recess such that the upper edges are below the upper extremity of the side members (24), and be bolted to the side members (24) to be retained in position.

5

8. A method according to claim 7, wherein each extension piece (48) can be used as either an upper or lower extension piece.



Application No: GB 9828841.8
Claims searched: 1-3

Examiner: R E Hardy
Date of search: 15 September 1999

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.Q): A4B (B9B9); F2M (MD6)

Int Cl (Ed.6): A47B (47/00 47/02 47/03 47/05); H02B (1/30 1/40); H05K (5/00 5/02 5/03 5/04)

Other: Online : EPODOC, WPI, CLAIMS

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	GB2236374 A RITTAL-WERKE : See the Figures	1
A	GB1217337 A HARRIS & SHELDON : See Figures 3-5	1
A	GB1119889 A REITER : See the Figures	1
A	EP0189061 A1 RITTAL-WERKE : See Figure 1	1

X Document indicating lack of novelty or inventive step
Y Document indicating lack of inventive step if combined with one or more other documents of same category.

& Member of the same patent family

A Document indicating technological background and/or state of the art.
P Document published on or after the declared priority date but before the filing date of this invention.
E Patent document published on or after, but with priority date earlier than, the filing date of this application.



Divisional application,
of GB 2 288 418



INVESTOR IN PEOPLE

Application No: GB 0218409.1
Claims searched: 1-3

Examiner: Mark Edwards
Date of search: 12 September 2002

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.T): A4B (B9F10, B1C1, B1C2)

Int Cl (Ed.7): H02B, H05K

Other: Online: WPI, JAPIO, EPODOC

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	EP 0012209 A (RITTAL-WERK) Abstract & All figures	X=1 & 2

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.



Divisional application of
GB 9828841.8



INVESTOR IN PEOPLE

Application No: GB 0218409.1 02/11/02 Examiner: Mark Edwards
Claims searched: 1-2 Date of search: 12 September 2002

Patents Act 1977 Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.T): B3A

Int Cl (Ed.7): F16B

Other: Online: WPI, JAPIO, EPODOC

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	GB 2057044 A (DAVIS) All figures,	
A	GB 2072059 A (HOTPOINT) Figures 3, 8 & 9	

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.



Divisional application
of GB 98 288 41.8



INVESTOR IN PEOPLE

Application No: GB 0218410.9
Claims searched: 1-6

Examiner: Mark Edwards
Date of search: 12 September 2002

Patents Act 1977 Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed. T): A4B (B9B7)

Int Cl (Ed. 7): H02B, H05K

Other: Online: WPI, JAPIO, EPODOC

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	GB 2321004 A (QUICK) Figures 5 & 6	
A	US 5380083 A (JONES) Figures 1,2 & 5	
A	US 4669697 A (SUZEKI) Figures 2 & 3	

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference P006038W0 MP	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/GB 99/ 04397	International filing date (day/month/year) 23/12/1999	(Earliest) Priority Date (day/month/year) 30/12/1998
Applicant APW ELECTRONICS LIMITED et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

/GB 99/04397

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A47B96/06 A47B57/40

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A47B H02B H05K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 012 209 A (LOH KG RITTAL WERK) 25 June 1980 (1980-06-25)	1,3
X	claim 1	4,5
Y	US 5 425 520 A (MASUMOTO SAKAE) 20 June 1995 (1995-06-20) abstract	1,3
X	DE 18 48 964 U (LICENTIA PATENT-VERWALTUNG GMBH) 20 September 1961 (1961-09-20) claims 3,4	6
A	GB 2 160 765 A (SCHAEFER GMBH FRITZ) 2 January 1986 (1986-01-02) the whole document	7-10



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"Z" document member of the same patent family

Date of the actual completion of the international search

3 April 2000

Date of mailing of the international search report

07/04/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3018

Authorized officer

Dailloux, C

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 99/04397

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0012209	A	25-06-1980	DE 7833180 U AT 1657 T	08-03-1979 15-10-1982
US 5425520	A	20-06-1995	GB 2265301 A	29-09-1993
DE 1848964	U		NONE	
GB 2160765	A	02-01-1986	DE 3423721 A BE 902716 A FR 2566972 A NL 8501855 A	09-01-1986 16-10-1985 03-01-1986 16-01-1986



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : A47B 96/06, 57/40	A1	(11) International Publication Number: WO 00/40119 (43) International Publication Date: 13 July 2000 (13.07.00)
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(30) Priority Data:
9828841.8 30 December 1998 (30.12.98) GB

(71) Applicant (*for all designated States except US*): APW ELECTRONICS LIMITED [GB/GB]; Electron Way, Chandlers Ford, Eastleigh, Hampshire SO53 4ZR (GB).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): SCHNABEL, John, David [GB/GB]; 11A Berkeley Close, Hill Head, Fareham, Hampshire (GB). PARKIN, John, Richard [GB/GB]; 1 St Mary's Close, Brangore, Christchurch, Dorset BH23 8HU (GB).

(74) Agent: PURVIS, William, Michael, Cameron; D Young & Co, 21 New Fetter Lane, London EC4A 1DA (GB).

(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

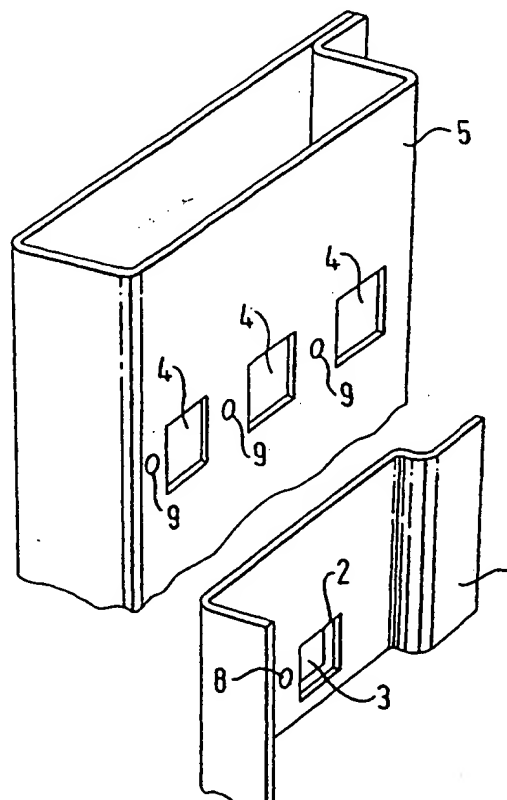
Published

With international search report.

(54) Title: CABINET

(57) Abstract

In a cabinet having vertically extending side members (5) forming part of a chassis of the cabinet, panel mounts (1), also to extend vertically in the cabinet and to have panels mounted thereupon, are mountable to the side members (5) by integral members (3) which extend parallel to the outer face of the panel mount (1) at a spacing from the outer face and in a direction perpendicular to the longitudinal extent of the panel mount (1), i.e., horizontally. The integral members (3) are engaged in respective apertures in the side members (5) or in braces (7) extending between the side members (5) followed by forward or rearward movement to effect securement, retaining means such as pins or studs then being inserted in aligned bores (8, 9) in the panel mounts (1) and side members (5) to prevent return movement.



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EE	Estonia						

CABINET

The invention relates to electrical cabinets.

Electrical cabinets are used for receiving electronic and electrical components particularly but not exclusively for the operation of local data networks. The components such as sub-racks with electronic and electrical components, fans and other accessories are mounted within the cabinet on internal frames and the cabinets generally have side panels, a door and end panels and are mounted on a frame which preferably comprises upper and lower end members and vertically extending side members preferably provided one towards the front and the other towards the rear at each lateral side of the cabinet.

According to one aspect of the invention, panel mounts, comprising members to extend vertically within the cabinet and having attachment means whereby panels can be mounted thereupon, are mounted to the side members of the cabinet by integral members which extend substantially parallel to the outer face of the panel mount at a spacing from the outer face and in a direction perpendicular to the longitudinal extent of the panel mount, such integral members each being engaged in a respective aperture in the side members or braces extending between the side members at one lateral side of the cabinet, followed by movement forwardly or rearwardly to secure the panel mount to the side members, retaining means such as a pin or stud then being inserted in aligned bores in the panel mounts and side members or braces to prevent return movement in said forward or rearward directions.

Such method of securement can have the advantage over previously proposed methods which involved vertical movement of the panel mounts to secure them, that panel mounts of the full height of the side members can be secured to the side members where previously, due to the vertical movement experienced during the engagement, it was necessary for the panel mount to be significantly shorter than the side member. The panel mounts, which generally define a 483 mm (19 inch) wide mounting, can thus be secured at various locations in the depth of the cabinet and can extend for the full height of the side members.

Preferably the apertures in the side members or braces are spaced at 25 mm horizontal spacing to set the locations at which the panel mounts can be secured at

25 mm spacings.

Advantageously the braces have horizontally elongate slots therein in addition to the apertures whereby the braces can be secured by fastenings means, such as bolts, extending through the slots whereby the braces are horizontally movable with respect to the side members to permit the panel mounts to be secured at any desired location in the depth of the cabinet.

According to another aspect of the invention in an electrical cabinet chassis supports, for example for supporting shelves, are provided in the form of cantilevers by providing the chassis supports with vertically spaced securing hooks which together are capable of preventing pivoting movement of a mounted article such as a shelf.

The vertically spaced hooks may project longitudinally of a wall of the chassis support and parallel thereto to be engaged in respective apertures in a member from which they are to be supported.

According to a further aspect of the invention, means to secure in abutment two rectangular section tubular metal members with their longitudinally axes, mutually at right angles comprises punching or drilling at least two first holes in one wall of each of the metal members, acting through the first holes so formed to burst a respective second hole to each first hole in the opposite wall of the metal members to form an outwardly extending collar, screw threading the second holes in one of the members, engaging the collars of the other of the members in the first holes of said one of the members and engaging a bolt through the aligned first and second holes of said one and said other members to engage the screw thread in the collar of said one of the members to clamp the members together.

According to a still further aspect of the invention, in an electrical cabinet a method of hanging a vertical side panel comprising engaging a top flange of the side panel, which top flange has a horizontal portion and a vertical return, over an upper suspension member of a frame of the cabinet and engaging a horizontal lower flange of the side panel with an upturned hook portion at the lower end of the frame of the cabinet so that the upturned hook projects upwardly through an aperture in the horizontal lower flange.

Preferably the aperture in the horizontal lower flange is aligned with a cutout in a free edge of the flange and engagement is effected by engaging the hook in the cutout

and then slightly raising the side panel while pushing it inwardly towards the cabinet before lowering the side panel downwardly onto the hook.

The upper suspension member of the frame may be provided at the upper end of vertical side members of the frame or may be provided on extension pieces which are supported by the vertical side members and project laterally outwardly to extend the width of the cabinet beyond the side members. By using such extension pieces extra wiring accommodating spaces can be provided at one or both of the sides of a cabinet.

The extension pieces can have hooks to engage over the upper edge of the side members, preferably in a recess so that such upper edges are below the upper extremity of the side members, and be bolted to the side members to retain them in position. Preferably each extension piece can be used as either an upper or a lower extension piece.

The invention is diagrammatically illustrated by way of example in the accompanying drawings, in which:-

Figure 1 is a perspective view of a panel mount with attachment means and a side member on which it can be mounted according to the invention;

Figure 1a is a sectional end view of the panel mount of Figure 1;

Figure 2 is an elevation of a brace to which the panel mount of Figure 1 can be secured;

Figure 3 is a perspective view of an inner face of a chassis support with cantilever engagement hooks;

Figure 4 is a view of the chassis support of Figure 3 from the other side;

Figure 5 is an exploded view showing components of an electrical cabinet;

Figure 6 is a view of the portion of Figure 5 indicated by the arrow VI but with a panel hung thereon;

Figure 7 is a sectional view through two of the components shown in Figure 6;

Figure 8 is a schematic view indicating hanging of a vertical side panel of an electrical cabinet by a method according to the invention;

Figure 9 is a sectional view taken on line IX-IX of Figure 8;

Figure 10 is a perspective view from above and an inner face of an extension member of an electrical cabinet according to the invention in a position to form an upper extension member;

Figure 11 is a view from the other side of the extension member of Figure 10 also orientated so as to form an upper member; and

Figure 12 is a view of the extension member shown in Figures 10 and 11 but in an orientation to form a lower extension member.

5 Referring to the drawings and firstly to Figures 1 and 2, a panel mount 1 is a generally angular section strip of metal and in one face has a three sided cutout 2 with the portion of the wall cut out, bent outwardly and bent back to form a tongue 3 which extends parallel to the wall in which the cutout 2 is formed. The tongue 3 can be inserted in any one of horizontally spaced apertures in a vertical side member 5 forming
10 part of the frame of an electrical cabinet or can be inserted in any one of horizontally spaced apertures 6 in a brace 7 which can be secured to the side members of the frame of an electrical cabinet on one side of the cabinet to extend between a front side member and a rear side member. The apertures 4 or 6 are spaced at a pitch of 25 mm and thus the panel mount 1 can be supported on the side member 5 or the brace 7 by inserting the
15 tongue 5 in an aperture 4 or 6 and then moving the panel mount 1 to cause the tongue 5 to move behind the web of the side member 5 or the brace 7 in which the aperture 4 or 6 is formed. The panel mount 1 does thus not need to be moved vertically to secure it and can be of the same length as the side members so as to extend completely between upper and lower frame members of the cabinet. A through aperture 8 may be provided in the
20 panel mount 1 through which a pin or clip (not shown) can be inserted to engage in an aperture 9 provided alongside the aperture 4 or 6 in which the tongue 3 is engaged thereby to prevent return movement which would free the tongue from the aperture 4 or 6. Elongate slots 10 in the brace 7 can be used to secure the brace 7 by bolts to the side members, the length of the slots 10 allowing longitudinal shifting of the brace 7 with
25 respect to the side members to allow stepless positioning of the panel mounts with respect to the side members 5.

Referring to Figures 3 and 4, a chassis support 11 is shown which comprises upper and lower flanges 12 and 13 above and below a vertical web 14. In the web 14 two cutouts 15 are formed by cutting around three sides and the member formed by each
30 cutout is pressed out of the plane of the web 14 by a bend 16 and a further bend 17 and the tongue so formed which extends parallel to the web 14 but spaced therefrom is cut away to form upper and lower hooks 18, 19. By providing the two spaced hooks the

chassis support 11 can be engaged in two vertically spaced apertures and then moved downwardly so that the chassis support 11 is cantilevered from a pair of the hooks 18, 19 and can resist tilting forces applied thereto. Although the chassis support 11 is shown as having two cutouts 15 and two pairs of hooks 18, 19 it is only envisaged that one or other of the pairs of hooks would be used at any one time but by providing two cutouts the chassis support 11 can act as a lefthanded chassis support or a righthanded chassis support. The chassis supports 11 are particularly suitable for supporting shelves in electrical cabinets.

Referring to Figure 5, an electrical cabinet 20, shown in exploded form, comprises an upper frame 21 and a lower frame 22 each formed by back-to-back U-shaped members 23 of tubular metal, four side members 24 extending between the upper frame 21 and the lower frame 22, an upper member 25 with cutouts 25a in three of the walls thereof, removable side panels 26 only one of which is shown and a removable door 27 which closes the front of the cabinet.

As can be seen in Figure 6, the side panel 26 has an upper horizontal flange 28 with a return vertical flange 29, the panel 26, 28, 29 enveloping the two side members 24 on that side of the frame of the cupboard.

Figure 7 shows the means whereby each of the U-shaped members 23 which extend horizontally can be mounted to the respective side members 24 which extend vertically. Two first holes 30 are punched or drilled in one wall 31 of the side member 24 and two first holes 32 are punched or drilled in one wall 33 of the U-shaped member 23. Operating through the first holes 30, 32, second holes 34 are then burst through the second wall 35 of the side members 24 and second holes 36 are burst through the second wall 37 of the U-shaped member 23. Bursting the holes in this way forms collars 38 at the outsides of the holes 34 and collars 39 at the outside of the holes 36. The holes 36 are then screw threaded. When the members 23, 24 are pressed together the collars 38 on the side members 24 are a push fit into the first holes 32 in the U-shaped member 23 so that when bolts (not shown) are inserted along the aligned axis 40 of each of the holes 30, 34, 32, 36 to pull the members 23, 24 tightly into engagement with one another, the members 23, 24 are locked accurately at right angles one to the other without any play such that even a tall framework of U-shaped members 23 and side members 24, for example two metres tall, can stand rigidly without a tendency for the upper frame to

move sideways or from to rear due to the connections being less than entirely rigid. The collars 38 can however have a tapering formation such that great precision is not required in the formation of the holes and collars.

Referring to Figures 8 to 12, the upper end of each side member 24 is provided
5 with a formation similar to that shown in Figure 10 at the righthand side thereof, that is to say it has a groove 41 in the upper face 42 stepped back from a front upper corner 43. Actually the formation shown in Figure 10 is an extension piece to be hung on the upper or lower end of one of the side members 24 but the formation of the top end and bottom end of the side members 24 is the same as shown in Figure 10.

10 Referring to Figure 8, the side panel 26 shown has its horizontal upper flange 28 overlapping the upper surface 42 of the side member 24 and its vertical flange 29 engaged in the groove 41 of the upper end of the side member 24. At the lower end the side panel 26 has a horizontal flange 44 which, as shown in Figure 9, has, in alignment with each of the side members 24, apertures 45 and cutouts 46. At each side of the side
15 member 24 both at the upper and at the lower end a hook 47 is provided. The hook 47 at the upper end has no function but that at the lower end engages in a respective one of the apertures 45. With reference again to Figure 8 the method of engagement is that the panel 26 is first hooked onto the upper end of the side member so that the vertical flange 29 engages in the groove 41. The bottom end of the panel 26 is then pushed inwardly to
20 engage the hooks 47 in the cutouts 46, a flared mouth of the cutouts 46 assisting this alignment. The side panel 26 is then raised slightly and pushed inwardly so that the hook 47 at the lower end of the side member 24 can engage in the respective aperture 45 in the bottom flange 44 of the side panel 26. The side panels 26 can thus quickly and easily be engaged with or disengaged from the framework of the cabinet. It will be seen
25 that the hooks 47 taper down towards their free ends such that the weight of the panel engages the edges of the apertures 45 both with the outer and with the inner faces of the hook 47 so that vibration will not cause rattling of the panel.

Referring now also to Figures 11 and 12, the extension pieces 48 have, in addition to the groove 41, the top face 42, the front edge 43 and the hooks 47 previously
30 described, a bent out tongue 49 and aligned apertures 50, 51 by means of which they can be hooked onto and bolted to the outer face of the upper and lower ends of the side members 24. The extension pieces 48 are preferably 100 mm between the front edge 43

and the upper edge of the face in which the tongue 49 is provided whereby they can space the side panels 26 outwardly from the side members 24 by 100 mm to give an additional space for extra wiring or other purposes. A blanking plate can extend between the door of the cabinet and the extended position of the side panels 26 to fill

5 100 mm space at the front. If two adjacent cabinets are each provided with extension pieces 48 on their adjacent sides then the two cabinets can be accurately spaced apart by 200 mm to form a wiring space therebetween, a suitable blanking plate being provided to cover the space to the front.

CLAIMS

1. Means for mounting panels of a cabinet comprising panel mounts (1) in the form of members to extend vertically within the cabinet and having attachment means
5 whereby panels can be mounted thereupon, the panel mounts (1) being mountable to side members (5) of the cabinet by integral members (3) which extend substantially parallel to the outer face of the panel mount (1) at a spacing from the outer face and in a direction perpendicular to the longitudinal extent of the panel mount (1), such integral members (3) each being engaged in a respective aperture (4, 6) in the side
10 members (5) or braces (7) extending between the side members (5) at one lateral side of the cabinet, followed by movement forwardly or rearwardly to secure the panel mount (1) to the side members (5), retaining means such as a pin or stud then being inserted in aligned bores (8, 9) in the panel mounts (1) and the side members (5) or the braces (7) to prevent return movement in said forward or rearward directions.
15
2. Means for mounting panels of a cabinet according to Claim 1, in which the apertures (4, 6) in the side members (5) or braces (7) are spaced at 25mm horizontal spacing to set the locations at which the panel mounts (1) can be secured at 25mm spacings.
20
3. Means for mounting panels of a cabinet according to Claim 1 or Claim 2, in which the braces (7) have horizontally elongate slots (10) therein in addition to the apertures (6) whereby the braces (7) can be secured by fastening means, such as bolts, extending through the slots (10) whereby the braces (7) are horizontally movable with
25 respect to the side members (5) to permit the panel mounts (1) to be secured at any desired location in the depth of the cabinet.
4. A chassis support (11) in an electrical cabinet provided in the form of a cantilever by providing the chassis support (11) with vertically spaced securing hooks
30 (18, 19) which together are capable of preventing pivoting movement of an article mounted by the chassis support.

5. A chassis support according to Claim 4, in which the vertically spaced hooks (18, 19) project longitudinally of a wall of the chassis support (11) and parallel thereto to be engaged in respective apertures in a member from which they are supported.

5 6. A method of securing in abutment two rectangular section tubular metal members (23, 24) with their longitudinal axes mutually at right angles comprising punching or drilling at least two first holes (30, 32) in one wall (31, 33) of each of the metal members (23, 24), acting through the first holes (30, 32) so formed to burst a respective second hole (34, 36) to each first hole (30, 32) in the opposite wall (35, 37)
10 of each of the metal members (23, 24) to form an outwardly extending collar (38, 39), screw threading the second holes (36) in one (23) of the members, engaging the collars (38) of the other (24) of the members in the first holes (32) of said one (23) of the members and engaging a bolt through the aligned first (30, 32) and second (34, 36) holes of said one (23) and said other (24) members to engage the screw thread in the
15 collar (39) of said one of the members to clamp the members (23, 24) together.

7. A method of hanging a vertical side panel (26) of an electrical cabinet comprising engaging a top flange of the side panel (26), which top flange has a horizontal portion (28) and a vertical return (29), over an upper suspension member
20 (24) of a frame of the cabinet and engaging a horizontal lower flange (44) of the side panel (26) with an upturned hook portion (47) at the lower end of the frame of the cabinet so that the upturned hook (47) projects upwardly through an aperture (45) in the horizontal lower flange (44).

25 8. A method according to Claim 7, in which the aperture (45) in the horizontal lower flange (44) is aligned with a cutout (46) in a free edge of the flange (44) and engagement is effected by engaging the hook (47) in the cutout (46) and then slightly raising the side panel (26) while pushing it inwardly towards the cabinet before lowering the side panel (26) downwardly onto the hook (47).

30

9. A method according to Claim 7 or Claim 8, in which the upper suspension member (24) of the frame is provided at the upper end of vertical side members (24)

of the frame or is provided on extension pieces (48) which are supported by the vertical side members (24) and project laterally outwardly to extend the width of the cabinet beyond the side members (24).

- 5 10. A method according to Claim 9, in which the extension pieces (48) have hooks (49) to engage over the upper edge of the side members (24), in a recess so that such upper edges are below the upper extremity of the side members (24), and be bolted to the side members (24) to retain them in position.
- 10 11. A method according to Claim 10, in which each extension piece (48) can be used as either an upper or lower extension piece.

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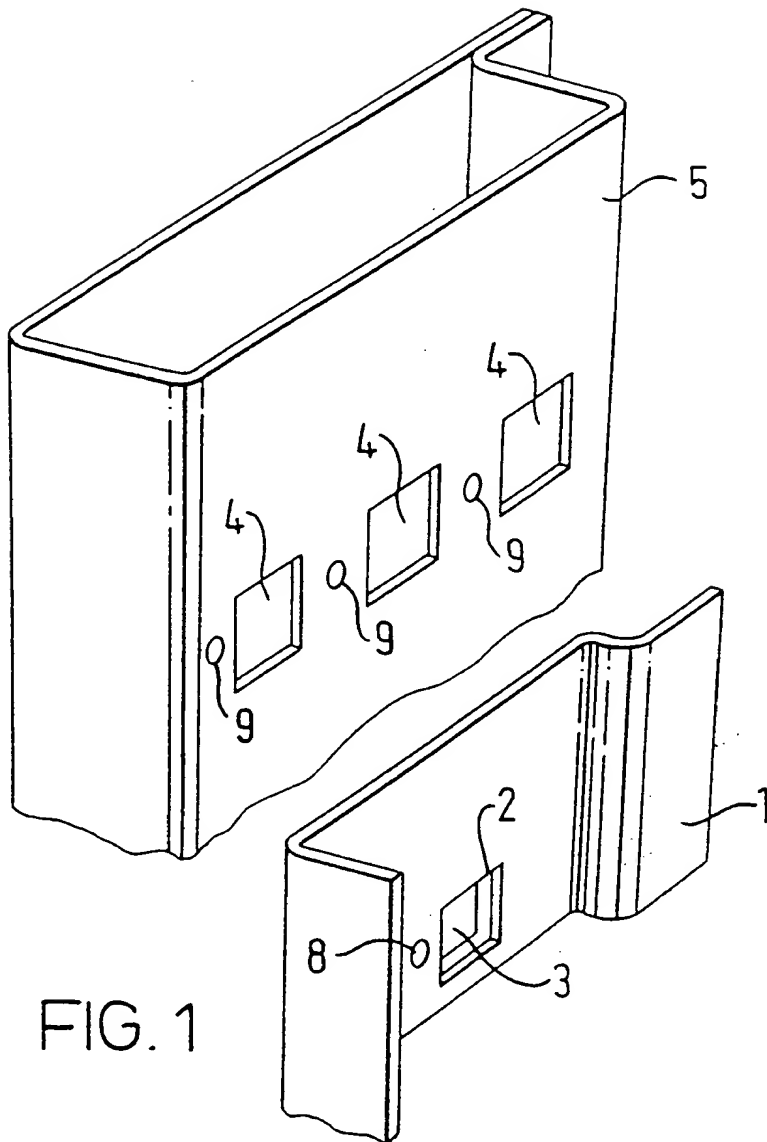


FIG. 1

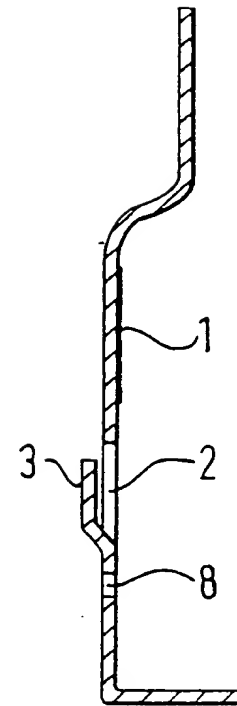


FIG. 1a

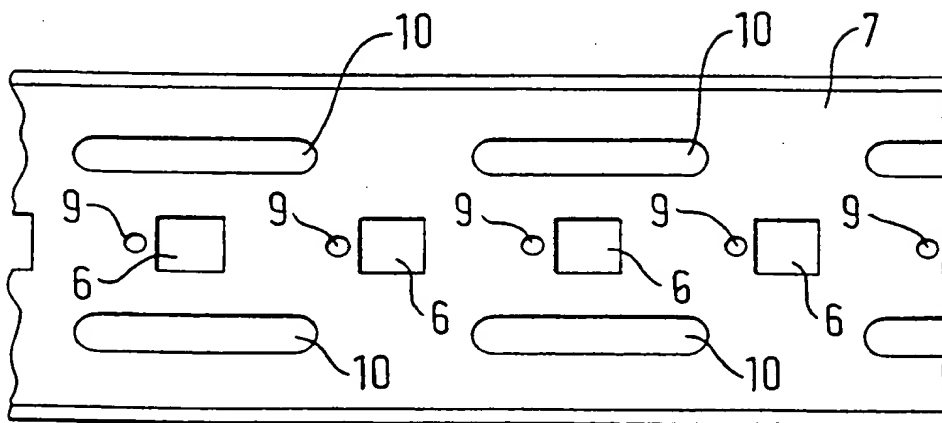


FIG. 2

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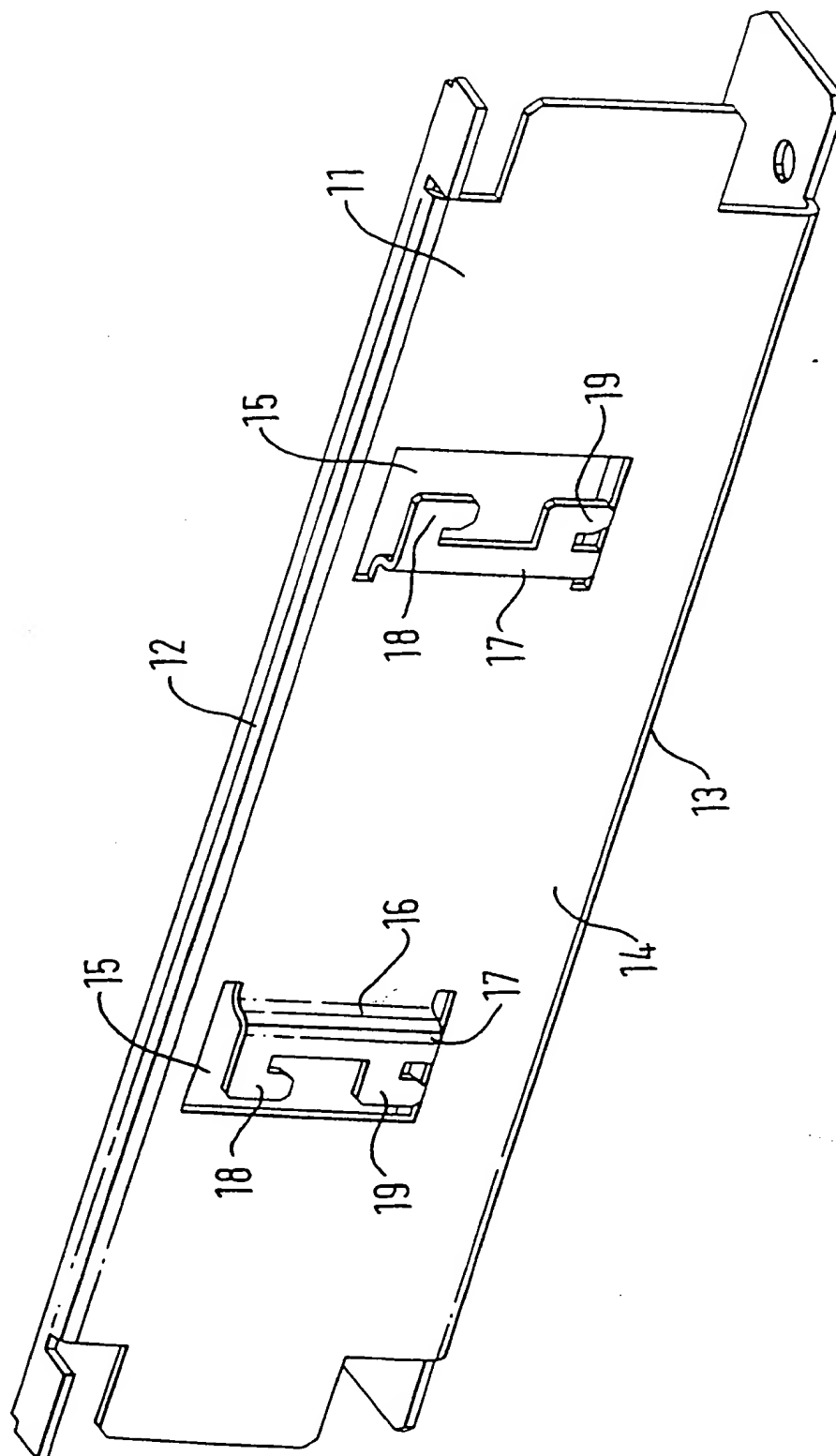


FIG. 3

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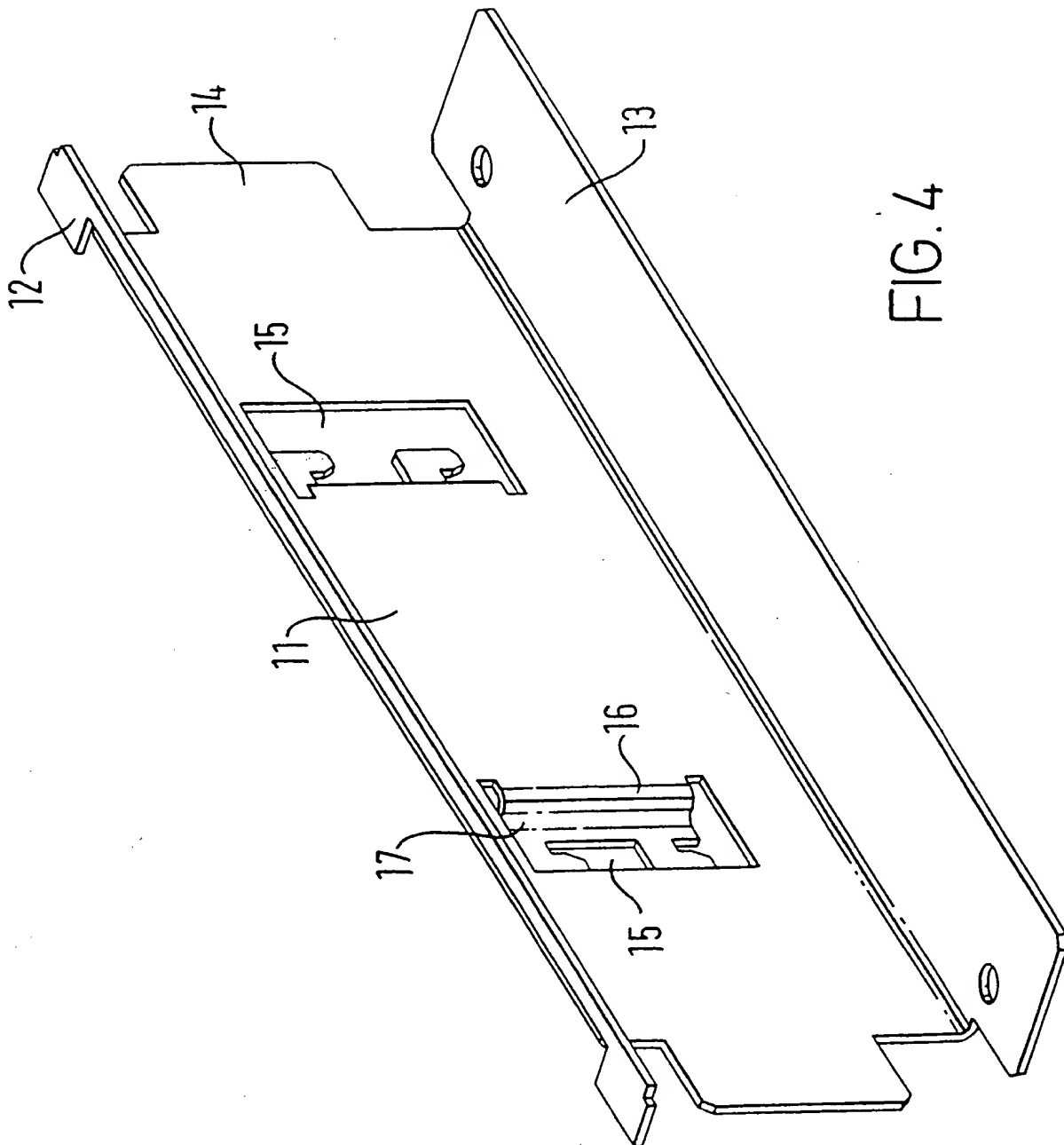


FIG. 4

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FIG. 5

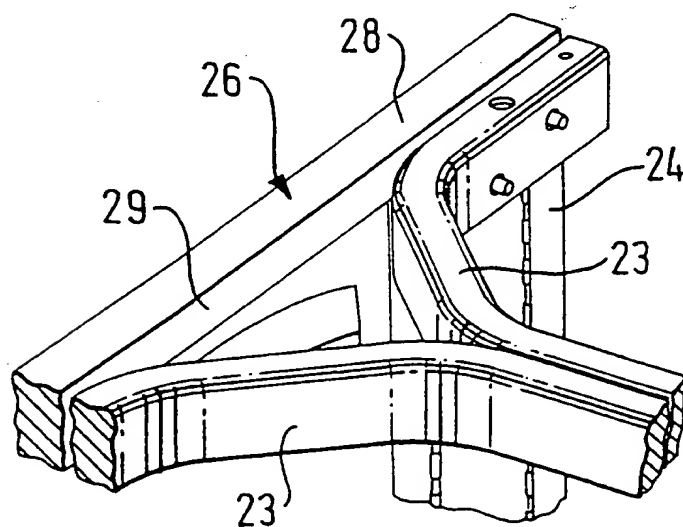
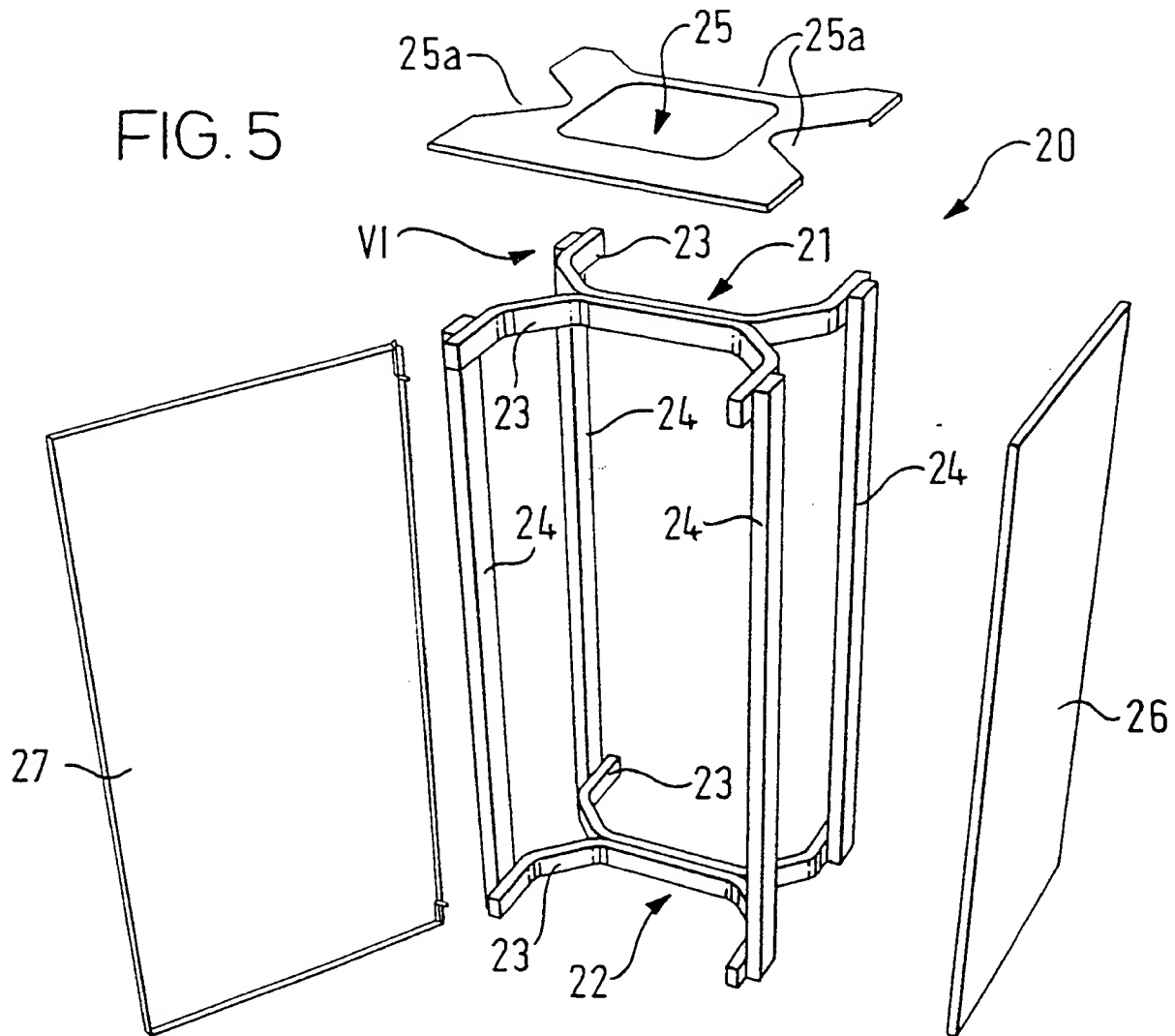


FIG. 6

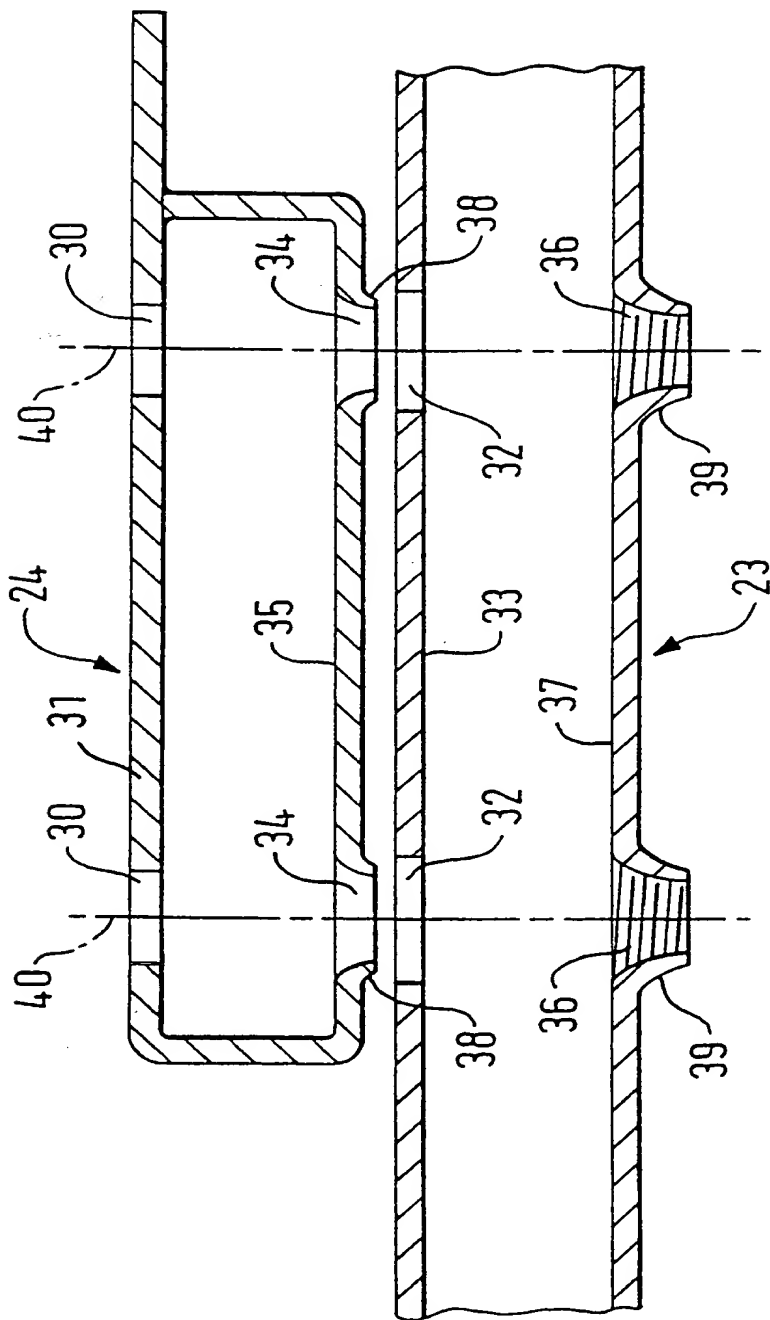


FIG. 7

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FIG. 11

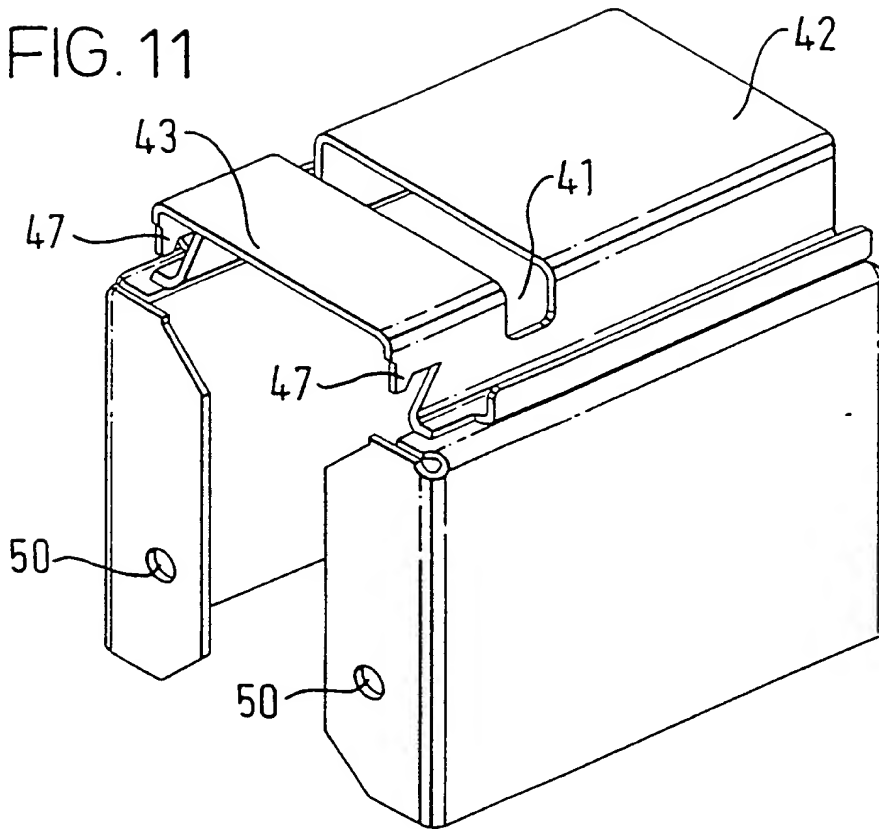
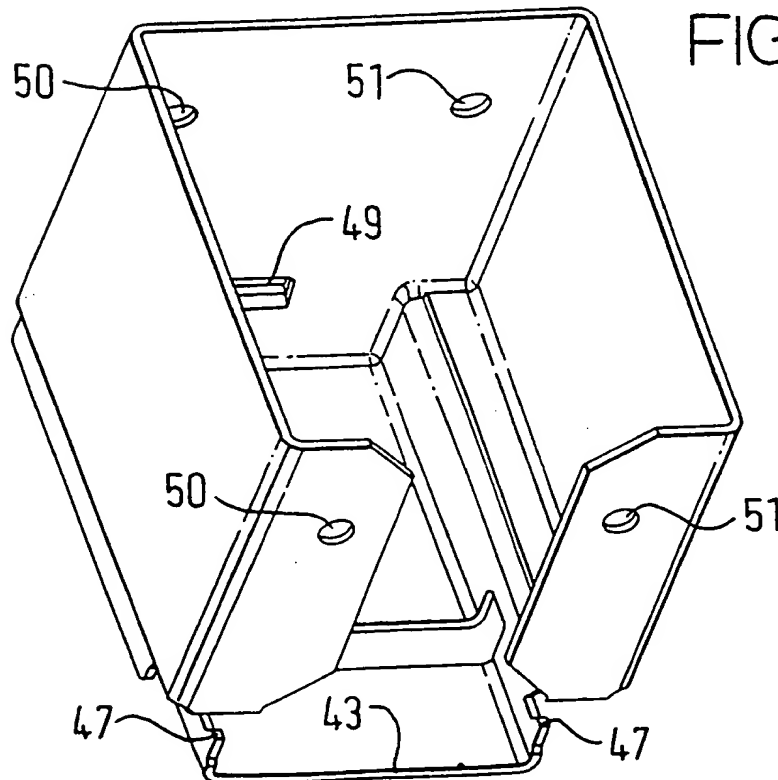


FIG. 12



INTERNATIONAL SEARCH REPORT

Inter. Appl. No.

PCT/GB 99/04397

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A47B96/06 A47B57/40

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A47B H02B H05K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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X	claim 1	4,5
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X	DE 18 48 964 U (LICENTIA PATENT-VERWALTUNG GMBH) 20 September 1961 (1961-09-20) claims 3,4	6
A	GB 2 160 765 A (SCHAEFER GMBH FRITZ) 2 January 1986 (1986-01-02) the whole document	7-10

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

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Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 99/04397

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